20

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EXAMINER	
ZHOU, TING	
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 09/901,414	Applicant(s) HIDA ET AL.	
	Examiner Ting Zhou	Art Unit 2173	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Note reference character "111" used throughout pages 18 and 19 and reference character "354" on page 31.

2. Applicant is required to submit a proposed drawing correction of the above noted deficiencies in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The abstract is objected to as being too long in length for the space provided on the computer tape used by the printer.

Claim Objections

4. Claims 1, 12, 13, 27, 28, 36, 37, 44 and 45 are objected to because of the following informalities:

a. The use of the word "prependicular" on lines 19, 34 and 25 of claims 1, 44 and 45, respectively, is inappropriate. The correct spelling of the word would be -- perpendicular --.

b. The meaning of the phrase "in at least one on the first or second" on lines 21, 36 and 27 of claims 1, 44 and 45, respectively, is unclear. The phrase should be revised to -- in at least one of the first or second -- to clearly convey the meaning of the claims.

c. The use of "to a another node" in claims 12, 13, 27, 28, 36 and 37 is grammatically incorrect. The correct phrase to use would be -- to another node --.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Lamping et al. U.S. Patent 5,619,632.

Referring to claims 1, 44 and 45, Lamping et al. teach a method, article of manufacture and apparatus comprising a memory, user input circuitry for providing data indicating signals from a user, a display, a processor coupled to the memory, user input circuitry and display, and a machine readable data storage medium, having stored thereon a computer program including instructions used upon execution by a computer for performing the steps (column 4, lines 15-32) including obtaining node-link data defining a node-link structure, the node-link structure including nodes and links, each link relating at least two of the nodes (column 1, lines 54-56); and using the node-link data to present a sequence of representations of the node-link structure on a display, the display having an edge along one side acting as a horizon (the edge bounding the part of the layout space representing the displayed layout space, as recited in column 17, lines 36-50); the sequence beginning with a first representation and ending with a last representation, the last representation being perceptible as a changed continuation of the first representation (column 2, lines 40-45); each representation in the sequence including bounded node features representing nodes in the node-link structure, each bounded node feature having a position and a region around the position (column 2, lines 45-48); the regions around the positions of the bounded node features in each representation together determining a first convex hull for the representation, each representation's first convex hull enclosing a total area for the representation (column 2, lines 48-54); the bounded node features of each representation including a subset of

more spaced node features, the regions around the positions of the more spaced node features determining a second convex hull for the representation, each representation's second convex hull enclosing a sufficient portion of the representation's total area to serve as a focus on the nodes within the second convex hull (enclosing approximately half the representation's total area allows a human viewing the display to distinguish the region within the second convex hull from other regions of the representation), and enclosing a region in which bounded node features have nearest node spacings along an axis perpendicular on the display to the horizon, that are in general perceptibly greater than in a region enclosed by the first convex hull but outside the second convex hull (column 2, lines 55-67); the nodes represented in at least one of the first and second representations forming at least one peripheral branch, each peripheral branch including a top level and at least one lower level, the top level including a top level node and the lower levels including lower level nodes that are not in the representation's subset of more spaced node features, each node at each lower level having a parent node at a next higher level to which the node is related through one link (column 3, lines 11-22); lower level node features that share a parent node feature having centers of area positioned on the display in order approximately along a line generally parallel to the horizon with sufficiently similar spacings along the axis perpendicular to the horizon from the region around the parent node feature and with sufficiently similar spacings in a dimension generally parallel to the horizon from adjacent node features along the line that the lower level node features sharing the parent node feature are perceptible as a group of related node features (column 3, lines 19-26); the second convex hulls of the first and last representations including subsets of bounded node features that represent different sets of nodes (column 3, lines 19-26); the sequence of representations producing a perception that at

least one bounded node feature has a nearest node spacing that increases from the first representation to the last representation and that at least one other bounded node feature has a nearest node spacing that decreases from the first representation to the last representation (column 3, lines 27-35). This is further shown in the display of the node-link representations in Figures 1, 18, 19 and 20.

Referring to claim 2, Lamping et al. teach the horizon comprising a substantially vertical, straight line on the display, as recited in column 17, lines 36-50 and further shown in Figures 14 and 15. As can be seen from the figures, vertical and horizontal lines enclose the display and the nodes are linked to each other through lines.

Referring to claim 3, Lamping et al. teach the horizon comprising a substantially horizontal, straight line on the display, as recited in column 17, lines 36-50 and further shown in Figures 14 and 15. As can be seen from the figures, vertical and horizontal lines enclose the display and the nodes are linked to each other through lines.

Referring to claim 4, Lamping et al. teach the sufficient portion enclosed by the second convex hull consisting of about one-fourth to about three-fourth of the representation's total display area, as recited in column 2, lines 55-59. Lamping et al. teach the second convex hull enclosing approximately half the representation's total area, which is within the range disclosed in the claim.

Referring to claim 5, Lamping et al. teach storing hyperbolic layout data specifying positions of nodes in the node-link structure in a hyperbolic space (interface for using layout data indicating node-link structure positions in a hyperbolic plane, as recited in column 16, lines 53-62 and column 17, lines 28-43), accepting user input indicating a portion of the node-link

structure for display (column 14, lines 47-56), using a half-plane model (the children nodes of a particular parent node are linked to the parent node on the display in either the top half or the bottom half of the hyperbolic plane) with compression (compressing and enlarging different nodes into focus, as shown in Figure 1; in the top image shown in Figure 1, node X is the largest node and therefore, the focal point of the display whereas in the bottom image shown in Figure 1, node X is compressed smaller and node Y2 is the largest node and the focal point of that display) to map the portion of the hyperbolic layout data for the portion of the node-link structure into display layout data and using the display layout data to display the first representation and using the display layout data to display the first representation. This is shown in Figures 16 and 18, where it can be seen that the hyperbolic plane display area is divided into an upper half plane and a lower half plane, wherein within each plane, the display is shown with parent-child node-link relationships.

Referring to claim 6, Lamping et al. teach the hyperbolic layout data (layout data in the hyperbolic plane) comprising a data structure associated with a node in the node-link structure which includes parameters specifying a position in the hyperbolic space relative to a parent node (obtaining position within hyperbolic plane relative to distance from a child's parent node), as recited in column 20, lines 46-52.

Referring to claim 7, Lamping et al. teach mapping the portion of the hyperbolic layout data to an Euclidean space (rectangular display) according to a half-plane model to produce Euclidean layout data, and compressing the Euclidean layout data to yield the display layout data (the layout data of the circular nodes within the hyperbolic plane is mapped and shown on the rectangular display wherein the display is compressed into two halves, the top half and bottom

half, each half of the display is further divided into node-link relationship representations), as recited in column 17, lines 28-43 and column 20, lines 20-39. This is further shown in Figures 1, and 18.

Referring to claim 8, Lamping et al. teach the display layout data providing a displayable representation arranged for display in a substantially rectangular form factor, as shown in Figure 1 and 18.

Referring to claim 9, Lamping et al. teach for each particular node to be displayed (child node), determining a distance along a first axis generally perpendicular to the horizon between a parent node and the particular node (the link along the y-axis between a parent node and a child node), and determining an offset along a second axis generally parallel to the horizon (the spacing along the x-axis between the children nodes of a particular parent) from the parent node and the particular node (column 14, lines 1-12, column 20, lines 20-52 and column 21, lines 15-38).

Referring to claim 10, Lamping et al. teach for each particular node to be displayed, determining a distance along a first axis generally perpendicular to the horizon between a parent node and the particular node (the link along the y-axis between a parent node and a child node), and determining an offset along a second axis generally parallel to the horizon (the spacing along the x-axis between the children nodes of a particular parent) from the parent node and the particular node, where determining a distance includes determining a number of child nodes, including the particular node, associated with the parent, assigning a width along the second axis for each of the child nodes and computing the distance in response to the widths of the child

nodes (column 13, lines 66-67 and continuing onto column 14, lines 1-12). This is also shown in Figure 14.

Referring to claim 11, Lamping et al. teach for each particular node to be displayed, determining a distance along a first axis generally perpendicular to the horizon between a parent node and the particular node (the link along the y-axis between a parent node and a child node), and determining an offset along a second axis generally parallel to the horizon (the spacing along the x-axis between the children nodes of a particular parent) from the parent node and the particular node, where determining a distance includes determining a number of child nodes, including the particular node, associated with the parent, assigning a width along the second axis for each of the child nodes, and computing the distance in response to the widths of the child nodes, so that there is enough space along the second axis to layout the child nodes including the particular node with the assigned widths (column 13, lines 66-67 and continuing onto column 14, lines 1-12). This is also shown in Figure 14.

Referring to claim 12, Lamping et al. teach comprising a data structure associated with a node in the node-link structure which includes parameters specifying a position in the hyperbolic space relative to another node (the root node), and wherein accepting user input includes receiving an indication of a position in one of the hyperbolic space and Euclidean space, finding a position of a first node in the hierarchy close to the indicated position, and then computing the positions of other nodes in the hierarchy relative to the first node, and displaying a changed representation based upon the position of the first node and the other nodes (column 20, lines 20-60 and Figure 20).

Referring to claim 13, Lamping et al. teach comprising a data structure associated with a node in the node-link structure which includes parameters specifying a position in the hyperbolic space relative to another node (root node), and wherein accepting user input includes receiving an indication of a position of the first node in one of the hyperbolic and Euclidean space, and then computing the positions of other nodes in the hierarchy relative to the first node and displaying a changed representation based upon the position of the first node and of the other nodes (column 20, lines 20-60 and Figure 20).

Referring to claim 14, Lamping et al. teach displaying the displayable representation in the display area (column 2, lines 40-43), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space (column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 15, Lamping et al. teach displaying the displayable representation in the display area having side corresponding to a horizon in the hyperbolic space (column 17, lines 28-35), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location is within a threshold distance in Euclidean space from

the horizon (0.025 of the edge), then signaling a position at a location spaced away from the side corresponding to the horizon (column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 16, Lamping et al. teach displaying the displayable representation in the display area having a first side corresponding to a horizon in the hyperbolic space, a second side opposite the horizon, a first region adjacent the first side, a second region adjacent the second side and a third region between the first and second regions (column 17, lines 20-28), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location is within the first region, then signaling a position at a location spaced away from the first side and to allow for display of a child of the node within the display area (column 20, lines 46-60 and column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 17, Lamping et al. teach displaying the displayable representation in the display area having a first side corresponding to a horizon in the hyperbolic space and a second side opposite the horizon (column 17, lines 20-28), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location is within a threshold distance from a first side (0.025 from the edge of either the first or the second

side of the display), then signaling a position at a location spaced away from the first side by a predetermined distance (column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 18, Lamping et al. teach displaying the displayable representation in the display area having a first side corresponding to a horizon in the hyperbolic space and a second side opposite the horizon (column 17, lines 20-28), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location is within a threshold distance from a second side (0.025 from the edge of either the first or the second side of the display), then signaling a position at a location spaced away from the second side by a predetermined distance (column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 19, Lamping et al. teach displaying the displayable representation in the display area having a first side corresponding to a horizon in the hyperbolic space, a second side opposite the horizon, a first region adjacent the first side, a second region adjacent the second side and a third region between the first and second regions (column 17, lines 20-28), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location for the node is within the third region, then signaling a position which

results in display of a second representation of the node at a location which shifted substantially vertically within the display area from the first representation (column 17, lines 45-57 and column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 20, Lamping et al. teach a computer implemented method (column 4, lines 15-20) for providing a displayable representation of a hierarchy, comprising laying out the hierarchy (the hierarchical parent-child node relationships) in a hyperbolic space to produce hyperbolic layout data for the hierarchy (interface for using layout data indicating node-link structure positions in a hyperbolic plane, as recited in column 16, lines 53-62 and column 17, lines 28-43), using a half-plane model (the children nodes of a particular parent node are linked to the parent node on the display in either the top half or the bottom half of the hyperbolic plane) with compression (compressing and enlarging different nodes into focus, as shown in Figure 1; in the top image shown in Figure 1, node X is the largest node and therefore, the focal point of the display whereas in the bottom image shown in Figure 1, node X is compressed smaller and node Y2 is the largest node and the focal point of that display) to map a portion of the hyperbolic layout data for the hierarchy to display layout data (Figures 1 and 16) and storing or transmitting the display layout data for use in displaying the displayable representation (column 4, lines 15-31 and column 6, lines 40-44). This is further shown in Figures 1, 18 and 19.

Referring to claim 21, Lamping et al. teach comprising a data structure associated with a node in the node-link structure which includes parameters specifying a position in the hyperbolic space relative to a parent node (obtaining position within hyperbolic plane relative to distance from a child's parent node), as recited in column 20, lines 46-52.

Referring to claim 22, Lamping et al. teach mapping the portion of the hyperbolic layout data to an Euclidean space (rectangular display) according to a half-plane model to produce Euclidean layout data, and compressing the Euclidean layout data to yield the display layout data (the layout data of the circular nodes within the hyperbolic plane is mapped and shown on the rectangular display wherein the display is compressed into two halves, the top half and bottom half, each half of the display is further divided into node-link relationship representations), as recited in column 17, lines 28-43 and column 20, lines 20-39. This is further shown in Figures 1, and 18.

Referring to claim 23, Lamping et al. teach the display layout data providing a displayable representation arranged for display in a substantially rectangular form factor, as shown in Figure 1 and 18.

Referring to claim 24, Lamping et al. teach for each particular node to be displayed (child node), determining a distance along a first axis generally perpendicular to the horizon between a parent node and the particular node (the link along the y-axis between a parent node and a child node), and determining an offset along a second axis generally parallel to the horizon (the spacing along the x-axis between the children nodes of a particular parent) from the parent node and the particular node (column 14, lines 1-12, column 20, lines 20-52 and column 21, lines 15-38).

Referring to claim 25, Lamping et al. teach for each particular node to be displayed, determining a distance along a first axis generally perpendicular to the horizon between a parent node and the particular node (the link along the y-axis between a parent node and a child node), and determining an offset along a second axis generally parallel to the horizon (the spacing along

the x-axis between the children nodes of a particular parent) from the parent node and the particular node, where determining a distance includes determining a number of child nodes, including the particular node, associated with the parent, assigning a width along the second axis for each of the child nodes and computing the distance in response to the widths of the child nodes (column 13, lines 66-67 and continuing onto column 14, lines 1-12). This is also shown in Figure 14.

Referring to claim 26, Lamping et al. teach for each particular node to be displayed, determining a distance along a first axis generally perpendicular to the horizon between a parent node and the particular node (the link along the y-axis between a parent node and a child node), and determining an offset along a second axis generally parallel to the horizon (the spacing along the x-axis between the children nodes of a particular parent) from the parent node and the particular node, where determining a distance includes determining a number of child nodes, including the particular node, associated with the parent, assigning a width along the second axis for each of the child nodes, and computing the distance in response to the widths of the child nodes, so that there is enough space along the second axis to layout the child nodes including the particular node with the assigned widths (column 13, lines 66-67 and continuing onto column 14, lines 1-12). This is also shown in Figure 14.

Referring to claim 27, Lamping et al. teach comprising a data structure associated with a node in the node-link structure which includes parameters specifying a position in the hyperbolic space relative to another node (the root node), and wherein using a half-plane model with compression to map a portion of the hyperbolic layout data for the hierarchy to display layout data, includes determining a position in one of the hyperbolic space and Euclidean space, finding

a position of a first node in the hierarchy close to the indicated position, and then computing the positions of other nodes in the hierarchy relative to the first node, and displaying a changed representation based upon the position of the first node using hyperbolic layout data (column 20, lines 20-60 and Figure 20).

Referring to claim 28, Lamping et al. teach comprising a data structure associated with a node in the node-link structure which includes parameters specifying a position in the hyperbolic space relative to another node (root node), and wherein using a half-plane model with compression to map a portion of the hyperbolic layout data for the hierarchy to display layout data, includes determining a position in one of the hyperbolic space and Euclidean space, and then computing the positions of other nodes in the hierarchy relative to the first node (column 20, lines 20-60 and Figure 20).

Referring to claim 29, Lamping et al. teach a computer implemented method (column 4, lines 15-20) for providing a displayable representation of a hierarchy (the hierarchical parent-child node relationships), comprising storing hyperbolic layout data specifying positions of nodes in the hierarchy in a hyperbolic space (column 4, lines 15-31 and column 6, lines 40-44), accepting user input indicating a portion of the hierarchy for display (column 14, lines 47-56), using a half-plane model (the children nodes of a particular parent node are linked to the parent node on the display in either the top half or the bottom half of the hyperbolic plane) with compression (compressing and enlarging different nodes into focus, as shown in Figure 1; in the top image shown in Figure 1, node X is the largest node and therefore, the focal point of the display whereas in the bottom image shown in Figure 1, node X is compressed smaller and node Y2 is the largest node and the focal point of that display) to map a portion of the hyperbolic

layout data for the hierarchy to display layout data (Figures 1 and 16) and using the display layout data to display the displayable representation (column 16, lines 53-62).

Referring to claim 30, Lamping et al. teach comprising a data structure associated with a node in the node-link structure which includes parameters specifying a position in the hyperbolic space relative to a parent node (obtaining position within hyperbolic plane relative to distance from a child's parent node), as recited in column 20, lines 46-52.

Referring to claim 31, Lamping et al. teach mapping the portion of the hyperbolic layout data to an Euclidean space (rectangular display) according to a half-plane model to produce Euclidean layout data, and compressing the Euclidean layout data to yield the display layout data (the layout data of the circular nodes within the hyperbolic plane is mapped and shown on the rectangular display wherein the display is compressed into two halves, the top half and bottom half, each half of the display is further divided into node-link relationship representations), as recited in column 17, lines 28-43 and column 20, lines 20-39. This is further shown in Figures 1, and 18.

Referring to claim 32, Lamping et al. teach the display layout data providing a displayable representation arranged for display in a substantially rectangular form factor, as shown in Figure 1 and 18.

Referring to claim 33, Lamping et al. teach for each particular node to be displayed (child node), determining a distance along a first axis generally perpendicular to the horizon between a parent node and the particular node (the link along the y-axis between a parent node and a child node), and determining an offset along a second axis generally parallel to the horizon (the spacing along the x-axis between the children nodes of a particular parent) from the parent node

and the particular node (column 14, lines 1-12, column 20, lines 20-52 and column 21, lines 15-38).

Referring to claim 34, Lamping et al. teach for each particular node to be displayed, determining a distance along a first axis generally perpendicular to the horizon between a parent node and the particular node (the link along the y-axis between a parent node and a child node), and determining an offset along a second axis generally parallel to the horizon (the spacing along the x-axis between the children nodes of a particular parent) from the parent node and the particular node, where determining a distance includes determining a number of child nodes, including the particular node, associated with the parent, assigning a width along the second axis for each of the child nodes and computing the distance in response to the widths of the child nodes (column 13, lines 66-67 and continuing onto column 14, lines 1-12). This is also shown in Figure 14.

Referring to claim 35, Lamping et al. teach for each particular node to be displayed, determining a distance along a first axis generally perpendicular to the horizon between a parent node and the particular node (the link along the y-axis between a parent node and a child node), and determining an offset along a second axis generally parallel to the horizon (the spacing along the x-axis between the children nodes of a particular parent) from the parent node and the particular node, where determining a distance includes determining a number of child nodes, including the particular node, associated with the parent, assigning a width along the second axis for each of the child nodes, and computing the distance in response to the widths of the child nodes, so that there is enough space along the second axis to layout the child nodes including the

particular node with the assigned widths (column 13, lines 66-67 and continuing onto column 14, lines 1-12). This is also shown in Figure 14.

Referring to claim 36, Lamping et al. teach comprising a data structure associated with a node in the node-link structure which includes parameters specifying a position in the hyperbolic space relative to another node (the root node), and wherein accepting user input includes receiving an indication of a position in one of the hyperbolic space and Euclidean space, finding a position of a first node in the hierarchy close to the indicated position, and then computing the positions of other nodes in the hierarchy relative to the first node, and displaying a changed representation based upon the position of the first node and the other nodes (column 20, lines 20-60 and Figure 20).

Referring to claim 37, Lamping et al. teach comprising a data structure associated with a node in the node-link structure which includes parameters specifying a position in the hyperbolic space relative to another node (root node), and wherein accepting user input includes receiving an indication of a position of the first node in one of the hyperbolic and Euclidean space, and then computing the positions of other nodes in the hierarchy relative to the first node and displaying a changed representation based upon the position of the first node and of the other nodes (column 20, lines 20-60 and Figure 20).

Referring to claim 38, Lamping et al. teach displaying the displayable representation in the display area (column 2, lines 40-43), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to

indicate a position in the hyperbolic space (column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 39, Lamping et al. teach displaying the displayable representation in the display area having side corresponding to a horizon in the hyperbolic space (column 17, lines 28-35), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location is within a threshold distance in Euclidean space from the horizon (0.025 of the edge), then signaling a position at a location spaced away from the side corresponding to the horizon (column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 40, Lamping et al. teach displaying the displayable representation in the display area having a first side corresponding to a horizon in the hyperbolic space, a second side opposite the horizon, a first region adjacent the first side, a second region adjacent the second side and a third region between the first and second regions (column 17, lines 20-28), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location is within the first region, then signaling a position at a location spaced away from the first side and to allow for display of a child of the node within the display area (column 20, lines 46-60 and column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 41, Lamping et al. teach displaying the displayable representation in the display area having a first side corresponding to a horizon in the hyperbolic space and a second side opposite the horizon (column 17, lines 20-28), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location is within a threshold distance from a first side (0.025 from the edge of either the first or the second side of the display), then signaling a position at a location spaced away from the first side by a predetermined distance (column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 42, Lamping et al. teach displaying the displayable representation in the display area having a first side corresponding to a horizon in the hyperbolic space and a second side opposite the horizon (column 17, lines 20-28), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location is within a threshold distance from a second side (0.025 from the edge of either the first or the second side of the display), then signaling a position at a location spaced away from the second side by a predetermined distance (column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 43, Lamping et al. teach displaying the displayable representation in the display area having a first side corresponding to a horizon in the hyperbolic space, a second side opposite the horizon, a first region adjacent the first side, a second region adjacent the second side and a third region between the first and second regions (column 17, lines 20-28), wherein accepting user input includes accepting signals from the user input pointing to a location in the display area (user input circuitry used to provide data to the display, causing presentation of images, as recited in column 14, lines 47-50 and column 34, lines 1-2) and filtering the user input in response to the location in the display area to indicate a position in the hyperbolic space, including if the location for the node is within the third region, then signaling a position which results in display of a second representation of the node at a location which shifted substantially vertically within the display area from the first representation (column 17, lines 45-57 and column 21, lines 29-38). This is also shown in Figures 18 and 20.

Referring to claim 46, Lamping et al. teach a method comprising obtaining node-link data defining a node-link structure (column 31, lines 50-54), using the node-link data to obtain layout data in a layout space having a negative curvature (hyperbolic layout space) according to a half-plane model of hyperbolic space (the children nodes of a particular parent node are linked to the parent node on the display in either the top half or the bottom half of the hyperbolic plane, as shown in Figures 16 and 17), using the layout data to create a representation of the node-link structure by mapping the layout data onto a display region and displaying the representation of the node-link structure (column 31, lines 55-60). This is further recited in column 28, lines 66-67 and continuing onto column 29, lines 1-15.

Referring to claim 47, Lamping et al. teach compressing the layout data (compressing and enlarging different nodes into focus, as shown in Figure 1; in the top image shown in Figure 1, node X is the largest node and therefore, the focal point of the display whereas in the bottom image shown in Figure 1, node X is compressed smaller and node Y2 is the largest node and the focal point of that display).

Referring to claim 48, Lamping et al. teach the node-link structure including a plurality of levels and the mapping including arranging nodes in the node-link structure so that nodes in a particular level in the plurality of levels lie in columns (branches) in the display region, as recited in column 9, lines 11-22 and further shown in Figures 18 and 19.

7. The prior art made of record on form PTO-892 and not relied upon is considered pertinent to applicant's disclosure. Applicant is required under 37 C.F.R. § 1.111(c) to consider these references fully when responding to this action. The documents cited therein teach similar methods of visualizing hierarchical node-link relationships.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ting Zhou whose telephone number is (703) 305-0328. The examiner can normally be reached on Monday-Friday 7:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached on (703) 308-3116. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

January 29, 2004

JOHN CABECA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100